UNIVERSIDAD POLITÉCNICA DE MADRID

CIME Centro de Investigación de Materiales Estructurales

1. Quiénes somos El CIME es un Centro de Investigación de la Universidad Politécnica de Madrid (UPM) que cuenta con amplias instalaciones para la caracterización y simulación de materiales estructurales.

Además, sus miembros participan activamente en la enseñanza a nivel de grado, master y doctorado, con estrechos vínculos con el trabajo científico del Centro.

1. About us CIME is a Research Centre of the Universidad Politécnica de Madrid (UPM) with extensive facilities for the characterisation and simulation of structural materials.

CIME's members are actively engaged in teaching at the bachelor, master, and doctoral levels, with close links to scientific work at the Centre.

2. Misión La misión del CIME es contribuir al desarrollo de estructuras y materiales estructurales más eficientes, seguros y sostenibles, a través de la generación de conocimiento científico y la transferencia de tecnología a la industria.

2. Mission CIME's mission is to contribute to the development of more efficient, safer and sustainable structures and structural materials through the generation of scientific knowledge and the transfer of technology to industry.

Colaboramos con empresas, centros de investigación y universidades como son Siemens-Gamesa, AIRBUS España, ITP S.A., John Deere Ibérica S.A., Curtis Wright Corporation, ENUSA Industrias Avanzadas, Northwestern University, Instituto Max Planck, IETCC-CSIC... entre otras.

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Centro de Investigación de Materiales Estructurales

Research Centre Structural Materials

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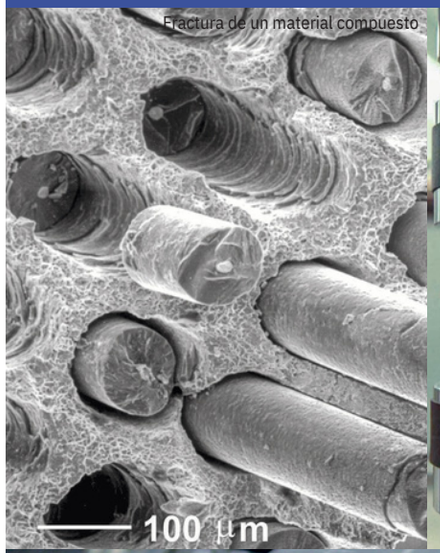
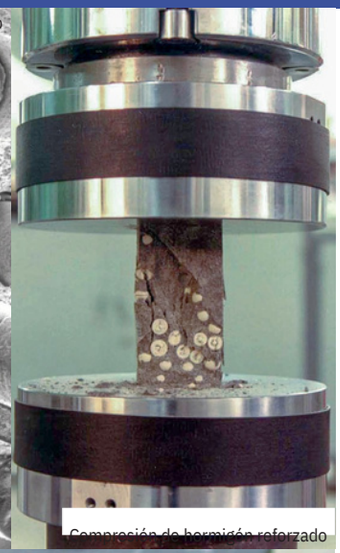
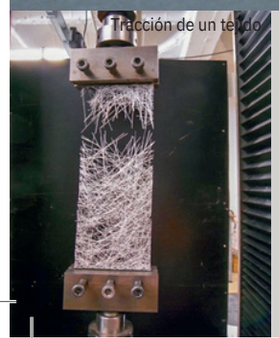
POLITÉCNICA UNIVERSIDAD POLITÉCNICA DE MADRID

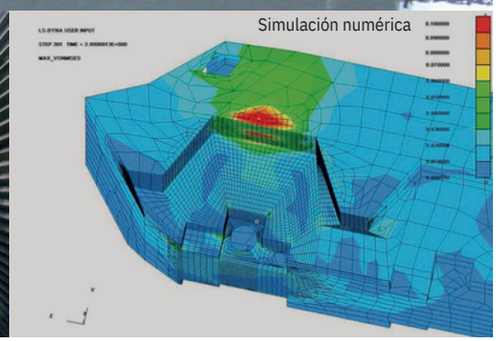


Fractura de un material compuesto


Compresión de hormigón reforzado


Impacto en un laminado


Tracción de un tejido


Simulación numérica

3. Research strategy

The four research lines of the CIME are:

1. Mechanical and microstructural characterisation of materials.
2. Structural integrity of metallic and quasi-fragile materials.
3. Numerical simulation of materials and structures
4. Development of advanced structural materials

4. Facilities

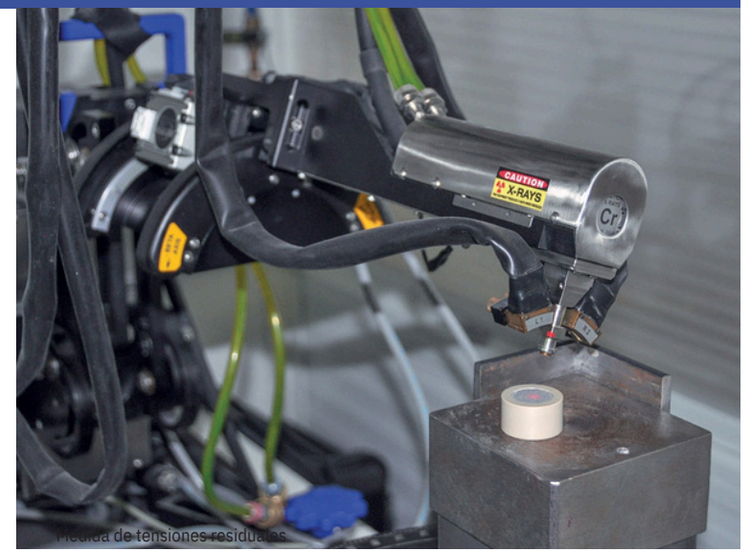
We have advanced research equipment in our laboratories.

Mechanical characterisation:

- Universal testing machines (up to 1,200 kN)
- Environmental chambers (77 - 2,200 K and ultra high vacuum)
- Hopkinson Bars (up to 1,100 K) with high speed video recording
  Ballistic testing on gas cannon and explosion test bench
- Nano-indenter (MTS-XP) and micro-hardness testers
- Tribometer wear tests (up to 1,300 K)

5. Physical and microstructural characterisation:

- Residual stress measurement laboratory (LMTR, UNE-EN ISO/IEC 17025 accredited by ENAC, the only one in Spain)
- Non-destructive testing laboratory (LabEnd, Madri+D Laboratory Network)
- Oxygen, nitrogen and hydrogen analyser
- Thermal analyser (ATD, TG, DSC)
- Mercury porosimeter
- Optical and scanning electron microscopy
- Equipment for metallographic preparation



Medida de tensiones residuales

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Research Centre on Structural Materials